

## WHAT WE CLAIM IS:

1. A method of interworking via a state machine for use in interworking between an H.323 based network and a session initiation protocol (SIP) based network comprising the steps of:
  - receiving at an interworking server, including a data processor for call processing and a memory for storing said state machine, a set-up request from an H.323 endpoint,
  - transmitting a corresponding invite message to an addressed SIP endpoint,
  - receiving a ringing response message from the SIP endpoint,
  - transmitting a corresponding alert message to the H.323 endpoint,
  - receiving an OK message from the SIP endpoint, transmitting a connect message to the H.323 endpoint,
  - negotiating said connect message utilizing an H.245 protocol,
  - transmitting an ACK message to the SIP endpoint, and
  - communicating between the H.323 endpoint and the SIP endpoint utilizing realtime transport protocol (RTP).
2. A gateway server for performing the method of claim 1, said interworking server comprising said gateway server.
3. A gateway server as recited in claim 2 wherein said interworking server further includes a media switching fabric for switching media terminated at the interworking server.
4. A method of interworking as recited in claim 1 further comprising the step of establishing a state machine table in said memory whereby, for a state of said state machine, a message associated with said state is categorized as one of a triggering message for triggering a predetermined action, a non-triggering message and an unexpected message in said state.
5. A method of interworking as recited in claim 1 wherein said set-up request receiving step further comprises the step of translating an SIP address to an H.323 address.
6. A method of interworking as recited in claim 5 wherein said translation step comprises the preliminary step of receiving SIP address data from an SIP server for storage in said memory.

7. A method of interworking as recited in claim 4, for an idle state, defining registration messages as triggering an addition of registration information, a Q.931 message as non-triggering and an H.245 message as an error message.

8. A method of interworking via a state machine for use in interworking between a session initiation protocol based network and an H.323 based network comprising the steps of :

receiving at an interworking server, including a data processor for call processing and a memory for storing said state machine, an invite message from an SIP endpoint and transmitting a corresponding setup message to an addressed H.323 endpoint,

receiving an alerting message from the H.323 endpoint and transmitting a corresponding ringing message to the SIP endpoint,

receiving a connect request message and an H.245 protocol message and transmitting an OK message to the SIP endpoint,

receiving an ACK message, and

communicating between the SIP endpoint and the H.323 endpoint utilizing realtime transport protocol.

9. A gateway server for performing the method of claim 8, said interworking server comprising said gateway server.

10. A gateway server as recited in claim 9 wherein said interworking server further includes a media switching fabric for switching media terminated at the interworking server.

11. A method of interworking as recited in claim 8 further comprising the step of establishing a state machine table in memory whereby, for a state of said state machine, a message associated with said state is categorized as one of a triggering message for a predetermined action, a non-triggering message and an unexpected message in said state.

12. A method of interworking as recited in claim 8 wherein said set-up request receiving step further comprises the step of translating an H.323 endpoint address to an SIP endpoint address.

13. A method of interworking as recited in claim 12 wherein said translation step comprises the preliminary step of receiving H.323 endpoint address data from an H.323 gatekeeper.
14. A method of interworking for use in interworking between a first protocol based network and a second protocol based network comprising the steps of:
  - receiving at an interworking gateway server serving said first and second protocol based networks a request from an endpoint in the first or second protocol based networks,
  - establishing a state machine in memory whereby, for each state of said state machine, a message associated with that state is categorized as one of a triggering message for a predetermined action, a non-triggering message and an error message,
  - establishing a translation table in said memory whereby an address formatted in said first protocol has a one-for-one correspondence with an address formatted in said second protocol,
  - processing said request in accordance with said translation table and said state machine and
  - permitting communication between said first and second endpoints utilizing a reliable transport protocol.
15. A method as recited in claim 14 further comprising the step of switching any media terminated at said interworking gateway to an addressed endpoint.
16. An interworking gateway server for performing the method of claim 14, said interworking gateway server comprising said state machine, said translation table and a data processor.
17. An interworking gateway server as recited in claim 16 further comprising a media switching fabric for switching media terminated at said interworking gateway server.
18. A method of interworking as recited in claim 14 wherein said first protocol based network is an H.323 protocol based network and said second protocol based network is a SIP protocol based network.

19. A method of interworking as recited in claim 14 where for an idle state a registration message is a triggering message for an action of adding registration information, a Q.931 message is non-triggering and an H.245 message is an error message.

20. A method as recited in claim 19 wherein for said idle state, the next state comprises a WaitForSetup state.